southern hemisphere. The Diplosomidæ are from tropical seas. The family of the Cœlocormidæ is only known from the southern hemisphere. In the Didemnidæ the genera are well represented in both hemispheres, while in that of the Polystyelidæ the southern and northern forms belong to different genera.

The Compound Ascidians are not deep-sea forms. While between shore-mark and a depth of 50 fathoms over 60 species and varieties were found, but 12 species were met with at depths between 100 and 250 fathoms; 4 species extended to a depth of 500; 7 species to a depth of 1000 fathoms; and one strange form, *Pharyngodictyon mirabile*, was found at a depth of 1600 fathoms. While as a matter of course the shallow-water forms have been better known from being so much more easily collected than the deep-sea species, still Prof. Herdman seems amply justified in his conclusions that the Compound Ascidians are essentially "a shallow-water group, that they are abundant around coasts in a few fathoms of water, and that they rapidly decrease in numbers as greater and greater depths are reached."

As to the phylogeny of the group, the author has come to the conclusion that the Compound Ascidians are polyphyletic in origin, being made up of several branches which at differing periods have arisen from the Simple forms.

As introductory to the description of new genera and species, we find a very complete and most instructive chapter devoted to the history, bibliography, and anatomy of the group. The general anatomical details are illustrated by some excellent woodcuts. The details of the anatomy of the various species are given in connection with their description, and are largely illustrated on the forty-nine plates drawn by Prof. Herdman which accompany the memoir. The investigation of the Ascidians, despite the existence of some few brilliant memoirs, is now for the first time done justice to; and, while we congratulate the author on his excellent work, we recognise in it not only an elaborate Report, but in addition a monograph of a, to this, very imperfectly known group.

Part 39 is a Report on the Holothuroideæ, by Hjalmar Théel, Part 2. In the second portion of this Report on these soft-bodied Echinoderms, Théel has not rested satisfied with giving a description only of the new forms of the groups Apoda and Pedata, which were brought home by the Expedition, but he has added a series of short accounts of all the forms known, even quoting the doubtful or little-known forms. Thus we have in this report also a veritable monograph of another most interesting group. Although unable to say much as to the bathymetrical distribution of these forms, still the *Challenger* dredgings have added many facts to our previous knowledge. Up to 1872 very few forms were known from depths exceeding 100 fathoms, and scarcely one from below 200 fathoms. Now we know of a number of forms met with at a depth of 500 fathoms, and these are generally distinct from shallow-water forms though belonging to the same genera. Several species have a vast bathymetrical distribution, some individuals still living near the shore, while others have descended without any notable change to depths of from 5 to 700 fathoms. Some few belong to genera that have no representatives in depths shallower than 500 fathoms. Among the very deep-sea forms we find *Cucumaria abyssorum*, at a depth of from 1500 to 2223 fathoms; *Synapta abyssorum*, at a depth of 2350 fathoms; *Pseudostichopus villosus*, at a depth of 1375 to 2200 fathoms; and the deepest-living of all the forms, *Holothuria thomsoni*, at a depth of from 1875 to 2900 fathoms. Some fifty-three new species or strongly-marked varieties are described and figured. A valuable bibliography is annexed. Many imperfectly-described species have been re-described from fresh specimens, thus rendering this Report of immense value to the working zoologist.

OUR BOOK SHELF

Miscellaneous Papers relating to Indo-China. 2 Vols. Trübner's Oriental Series. (London: Trübner and Co., 1886.)

In Oriental matters, more than in any other branch of investigation, the student is beset at every step by the difficulty of knowing what has been done already, for, besides books and papers published in London and other European capitals (which are accessible enough), there are those published in the East itself by numerous Societies as well as private individuals. In addition, many of the *Journals* and *Proceedings* of Societies to which the student would desire to refer are long since out of print, and many of them fetch a very high price indeed. Such are the *Chinese Repository*, the *Oriental Repertory*, Logan's *Journal of the Indian Archipelago*, and many others that could be named. In London these can be consulted at the British Museum, at the libraries of the India Office and the Royal Asiatic Society, and perhaps elsewhere; but this is of little service to the student elsewhere in the British Islands, and still less to one who is working in the very field itself, in the Malay Peninsula, Java, Borneo, Bangkok, or China. Occasionally, an enterprising Society or publisher may republish some of these old papers, but this is not often done, for the number of immediate buyers is necessarily small, and the return therefore slow and doubtful.

Recent events in various parts of Further India, including in this term that part of Asia west of Burmah and south of China, have attracted the public mind to these regions. Accordingly, the Straits Branch of the Royal Asiatic Society, which has its seat at Singapore, decided to publish a first instalment of papers relating to Indo-China, but mainly to the Malay Archipelago, scattered about in various periodicals now beyond the reach of most students, and out of the question for those who are unable to consult large libraries. A selection of papers was made by officers of the Society in Singapore; these were carefully edited by Dr. Rost, the Librarian of the India Office, and the work was fortunate in being placed in Messrs. Trübner's Oriental Series—a series of works which, whether we regard individual excellence or the range of Oriental knowledge which it embraces, stands unrivalled in the world, for in every direction it forms the high-water mark of European study of the East. The present volumes include selections from the papers published in Dalrymple's *Oriental Repertory*, the old *Asiatic Researches*, and the *Journal* of the Asiatic Society of Bengal. It may be hoped that the Society will feel able and willing to continue the issue of similar selections from other sources. The papers commence about 1808, and the latest are dated about 1860, and they embrace almost every subject of interest relating to the East. Some of the earlier reports are now of merely historical interest, such as Topping's account of Keddah, Barton's surveys and description of Balambangan, and the history of the formation of the East India Company's establishment at Penang. But others are of more value. There are numerous descriptions of various economic products, as the gum vine of Penang, the caoutchouc vine of Sumatra, and metals in the Malay Peninsula. In philology and ethnology we have a paper on traces of the Hindu language amongst Malays (by Marsden); Dr. Leyden's famous paper on the languages and literature of the Indo-Chinese natives, the alphabets of the Philippine Islands, &c. There are several papers on geology and natural history. Two of the latter are catalogues of the Mammalia and reptiles inhabiting the Malay Peninsula, by Dr. Cantor; while a third is a catalogue of the botanical collection brought home by the same naturalist in 1841. Another paper re-published has a peculiar interest, in view of the surveys undertaken by the French two years ago in the Krau isthmus for the purpose of cutting a canal. This is a report by Capts. Fraser and Forlong on a journey from the mouth of the Pakchan River to Krau, and thence across the isthmus to the Gulf of Siam. In the 16th paragraph of that report they urged that the Bay of Bengal could be connected with the China Sea by cutting through the isthmus at comparatively little expense. They enter into calculations showing how easily this could be done, the advantages of the route, &c. These calculations of distance, cost, &c., are exceedingly elaborate, and show that the two officers entered thoroughly into the matter.

It will thus be seen that the volumes offer much of interest to several classes of students, and we repeat the hope that the Singapore Society may shortly be in a position to continue the publication of further selections.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.*]

Physiological Selection and the Origin of Species

SEEING that criticisms on the theory of physiological selection are flowing through channels other than the pages of NATURE, and this in a volume larger than could at first have been anticipated, it seems desirable that I should now permit them to exhaust themselves before undertaking a further and a general reply. On the present occasion, therefore, I will only ask you to be good enough to insert the following remarks.

In order to put myself right with my critics, I should like them to remember that the paper published by the Linnean Society is designedly restricted to a preliminary statement of principles, which, it was hoped, might fulfil its avowed object of inducing other naturalists to co-operate with me in verifying the theory by observation and experiment, in the ways suggested. Such being the design, all details as to facts and references were intentionally omitted, and the same has to be said for all objections to the theory which had occurred to my own mind. All these things will require to be gone into with the utmost care, should the course of verifying inquiry eventually prove that the voice of Nature pronounces for the theory. Therefore, while I shall be thankful for all criticisms, I should like my critics to remember that they have not as yet my whole case before them. In particular, I may intimate that I should not have published even the outlines of my theory had I not been prepared for the very obvious exceptions which are taken to it by Mr. Wallace in the current issue of the *Fortnightly Review*.

I am much indebted to Mr. Francis Darwin for his reference to Mr. Belt's anticipation of my theory, for the fact that in its general form this theory has independently occurred to so distinguished a naturalist, appeals to me as an additional pledge of its probability. On the other hand, I am greatly disheartened by his further statement that he has reason to suppose his father was "familiar with the principle of physiological selection," and yet "did not regard it with any great favour." Hitherto I have been under the impression that it was a theory to which the judgment of his father would probably have inclined, and therefore I shall await with no ordinary interest the statement of his reasons for thinking otherwise, whether this be communicated through your columns or privately to myself. It only remains to add that, if Mr. Darwin will be kind enough to turn to p. 380 of my paper, he will find that I have quoted *in extenso*, and with its context on both sides, the passage from the "Origin of Species" which he extracts. But it does not appear to me that this passage furnishes any evidence that the theory of physiological selection was ever present to the mind of the writer—less evidence, for instance, than there is from a passage in one of his earliest writings that the theory of natural selection was present to the mind of Mr. Herbert Spencer.

GEORGE J. ROMANES

Geanies, Ross-shire, September 4

Actinotrocha of the British Coasts

I HAVE been reminded by Mr. T. Bolton, of Birmingham, that about three years ago I sent him living specimens of what Mr. A. G. Bourne afterwards identified as *Phoronis*. At the time I was under an impression, from hasty observation of the arrangement of the tentacular crown, and before I had seen the entire animal, that I had found a new Polyzoan allied to *Lophopus*. *Phoronis* occurs here in company with *Spio seticornis*; a solitary individual or a small group of the former, in the midst of a colony of the latter. A block of stone densely populated with these annelids is a most interesting object in a tank. To me they have proved so interesting that I believe I have spent more time over them than over any other marine organism.

I take the opportunity of calling attention to what I believe is an undescribed species of *Peridinium* that annually recurs in these waters. The form is flattish, and the outline bi-conical, having one end bifurcated, with a flagellum in the fork, and a central ciliary groove. By degrees it loses its present form, and assumes that of a spheroid.

I will gladly send specimens of either or all of these organisms to any naturalists who may wish to study them, if the cost of carriage be defrayed and the applicants not very numerous.

Sheerness-on-Sea W. H. SHRUBSOLE

A New Aërolite

ON May 28 last a farmer of Barntrup, a small town of the Principality of Lippe, in the north-west of Germany, walking in the afternoon, 2h. 30m., on the edge of a neighbouring wood, suddenly heard repeated reports like those of a gun, followed shortly after by an indistinct rumbling as of thunder. At the same time a meteorite came crashing through the leaves of a tree. The rumbling came from a south-westerly direction, the temperature was warm, the sky bright, and almost entirely cloudless.

This is the twelfth case of a meteoric fragment being found in the north-west of Germany. It is a monolith of about the size of a walnut, and weighs 17·3 grammes (specific weight = 3·495). It is covered with a black crust chipped off in places by the fall. Under this crust it is of a light gray colour and granitic substance, dotted in places with small yellow crystals, which are probably troilite or schreibersite. It has been lately presented to the Detmold Museum. L. HAEPKE

Bremen, Germany

DRAPER MEMORIAL PHOTOGRAPHS OF STELLAR SPECTRA EXHIBITING BRIGHT LINES

THE spectra of ordinary stars, whether examined directly by the eye, or indirectly by means of photography, present little variety. The comparatively few cases of deviation from the usual type are therefore particularly interesting, and the occurrence of bright lines in a stellar spectrum constitutes perhaps the most singular exception to the general rule. The brightness of the F line in the spectra of γ Cassiopeiæ and β Lyræ was noticed by Secchi. Rayet afterwards found three rather faint stars in Cygnus, the light of which was largely concentrated in bright lines or bands. The adoption at the Harvard College Observatory of a system of sweeping, with a direct-vision prism attached to the eye-piece of the